(TS) TEMPORARY SEEDING

SEED:
1 September to 15 February
Annual ryegrass @ 25 lb-50 lb / acre
Cereal (winter) rye @ 25 lb-50 lb / acre

16 February to 30 April
Annual ryegrass @ 60 lb-100 lb / acre

May 1 to 31 August
German millet @ 50 lb / acre

1 September to 15 October
K-31 fescue @ 5 lb / 1000 SF
Annual rye @ 1/2 lb / 1000 SF

LIME:
PH Below 4.2 - 3 tons per acre of agricultural limestone
PH 4.2 to 5.2 - 2 tons per acre of agricultural limestone PH 5.2 to 6 - 1 tons per acre of agricultural limeston

FERTILIZER:
10-20-10 @ 600 lb / acre

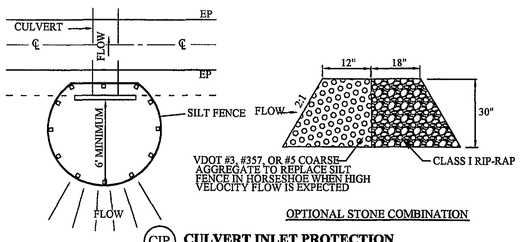
MULCH:
Shall be used over all seeded areas and shall be applied in accordance with Standard and Specification 3.35 of the Virginia Erosion and Sediment Control Handbook, latest edition.

SOIL CONDITIONS:
Incorporation of lime and fertilizer, selection of certified seed, mulching, maintenance of new seedlings, and reseeding shall be in accordance with specifications contained within the Virginia Soil Erosion and Sediment Control Handbook, latest edition. Additional seeding to be performed as required by the inspector.

SEED APPLICATION:
Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder, or hydroseeder on a firm, friable, seedbed. Maximum seeding depth shall be 1/4 inch.

SPECIFICATIONS:
1. The height of the silt fence (in front of the culvert opening) shall be a minimum of 16" and shall not exceed 34"
2. Extra strength filter fabric with a minimum spacing of stakes of 3' shall be used to construct the measure.
3. The placement of silt fence should be approximately 6' from the culvert in the direction of incoming flow, create a "horseshoe" shape as shown in detail.
4. If the silt fence cannot be installed properly or the flow and/or velocity of flow to the culvert protection is excessive and may breach the structure, the stone combination noted in detail should be utilized.

MAINTENANCE:
1. The structure shall be inspected after each rain and repairs made as needed.
2. Aggregate shall be replaced or cleaned when inspection reveals that clogged voids are causing ponding problems which interfere with on-site construction.
3. Temporary structures shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.



(CIP) CULVERT INLET PROTECTION

(PS) PERMANENT SEEDING

TYPE A

15 OCTOBER TO 1 FEBRUARY
K-31 FESCUE @ 5 LB / 1000 SF
BORZY WINTER RYE @ 1/2 LB / 1000 SF

1 FEBRUARY TO 1 JUNE
K-31 FESCUE @ 5 LB / 1000 SF
ANNUAL RYE @ 1/2 LB / 1000 SF

1 JUNE TO 1 SEPTEMBER
K-31 FESCUE @ 5 LB / 1000 SF
GERMAN MILLET @ 1/2 LB / 1000 SF

1 SEPTEMBER TO 15 OCTOBER
K-31 FESCUE @ 5 LB / 1000 SF
ANNUAL RYE @ 1/2 LB / 1000 SF

TYPE B (SLOPES 3:1 OR STEEPER)

15 MARCH TO 1 MAY
CROWN VETCH @ 1/2 LB / 1000 SF
PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF
RED TOP @ 1/8 LB / 1000 SF

15 AUGUST TO 1 OCTOBER
CROWN VETCH @ 1/2 LB / 1000 SF
PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF
RED TOP @ 1/8 LB / 1000 SF

LIME: 140 LB / 1000 SF Pulverized agricultural limestone

FERTILIZER: 5-20-10 @ 25 LB / 1000 SF
38-0-0 @ 7 LB / 1000 SF

MULCH:
Shall be used over all seeded areas and shall be applied in accordance with Standard and Specification 3.35 of the Virginia Erosion and Sediment Control Handbook, latest edition.

SOIL CONDITIONING:
Incorporation of lime and fertilizer, selection of certified seed, mulching, maintenance of new seedlings, and reseeding shall be in accordance with specifications contained within the Virginia Soil Erosion and Sediment Control Handbook, latest edition. additional seeding to be performed as required by the inspector.

SEED APPLICATION:
Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder, or hydroseeder on a firm, friable, seedbed. maximum seeding depth shall be 1/4 inch.

EROSION SEDIMENT CONTROL MINIMUM STANDARDS

Erosion and Sediment Control measures must bein accordance with the 1992 Virginia Erosion and Sediment Control Handbook, 3rd. edition.

Permanent or temporary soil stabilization shall be applied to denuded areas within seven (7) days after final grade has been reached on any portion of the site. Temporary soil stabilization shall be applied within seven (7) days to denuded areas that may be at final grade but will remain dormant (undisturbed) for longer than thirty (30) days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one (1) year.

During construction of the project, soil stockpiles shall be stabilized or protected with sediment trapping measures. The contractor is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site.

A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that, in the opinion of the local program administrator or agent, is uniform, mature enough to survive and will inhibit erosion.

Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in the land disturbing activity and shall be made functional before upslope land disturbances occurs.

Stabilization measures shall be applied to earthen structures such as dams, dikes, and diversions immediately after installation.

Cut and fill slopes shall be constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one (1) year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.

Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

Before newly constructed stormwater conveyance channels are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

When work in a live watercourse is preformed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.

When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary stream crossing constructed of nonerodible material shall be provided. All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met.

The bed and banks of any watercourse shall be stabilized immediately after work in the watercourse is completed.

Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:
A. No more than 500 linear feet of trench may be opened at one time.
B. Excavated material shall be placed on the uphill side of trenches.
C. Effluent from dewatering operations shall be filtered or passed thru an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
E. Applicable safety regulations shall be complied with.
D. Restabilization shall be accomplished within these regulations.

Where construction vehicle access routes intersect paved public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a public road surface, the road shall be cleaned thoroughly at the end of the day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner.

Contractor will be responsible to ensure that all erosion and sediment control structures and systems shall be maintained, inspected and repaired as needed to insure continued performance of their intended function and at all times within the VDOT right of way. An inspection shall be made following any runoff producing storm event at least once in every two-week period and within 48 hours.

All temporary erosion and sediment control measures shall be removed within thirty (30) days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program administrator. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

(MU) MULCHING

ORGANIC MULCH MATERIALS AND APPLICATION RATES

MULCHES	RATES: PER ACRE	RATES: PER 1000 SQ.FT.	NOTES:
STRAW OR HAY	1 1/2 - 2 TONS (MINIMUM 2 TONS FOR WINTER COVER)	70 - 90 LBS	FREE FROM WEEDS AND COARSE MATTER. MUST BE ANCHORED. SPREAD WITH MULCH BLOWER OR BY HAND.
FIBER MULCH	MINIMUM 1500 LBS.	35 LBS	DO NOT USE AS MULCH FOR WINTER COVER OR DURING HOT, DRY PERIODS.* APPLY AS SLURRY.
CORN STALKS	4 - 6 TONS	185 - 275 LBS.	CUT OR SHREDDED IN 4-6" LENGTHS. AIR-DRIED. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER OR BY HAND.
WOOD CHIPS	4 - 6 TONS	185 - 275 LBS.	FREE OF COARSE MATTER. AIR-DRIED. TREAT WITH 12 LBS. NITROGEN PER TON. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER, CHIP HANDLER, OR BY HAND.
BARK CHIPS OR SHREDDED BARK	50 - 70 CU.YDS.	1 -2 CU. YDS.	FREE OF COARSE MATTER. AIR-DRIED. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER, CHIP HANDLER, OR BY HAND.
* WHEN FIBER MULCH IS THE ONLY AVAILABLE MULCH DURING PERIODS WHEN STRAW SHOULD BE USED, APPLY AT A MINIMUM RATE OF 2000 LBS/AC. OR 45 LBS./1000 SQ.FT.			

(SF) SILT FENCE BARRIER DETAIL

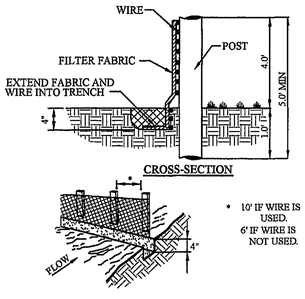


TABLE 3.02-B
PHYSICAL PROPERTIES OF FILTER FABRIC IN SILT FENCE

PHYSICAL PROPERTY	TEST	REQUIREMENTS
FILTERING EFFICIENCY	ASTM 5141	75% (MIN)
TENSILE STRENGTH AT 20% (MAX) ELONGATION (*)	VTM-52	EXTRA STRENGTH - 50 LBS./LINEAR INCH (MIN)
FLOW RATE	ASTM 5141	0.2 GAL./SQ.FT./ MINUTE (MIN)
ULTRAVIOLET RADIATION STABILITY %	ASTM-G-26	90% (MIN)

(*) REQUIREMENTS REDUCED BY 50% AFTER SIX MONTHS OF INSTALLATION.

MULCHING NOTES

1. Prior to mulching, complete required grading and install needed sediment control practices.

2. Lime and fertilizer should be incorporated and surface roughening accomplished as needed, seed should be applied prior to mulching except in the following cases:
A. Where seed is to be applied as part of a hydroseeder slurry containing fiber mulch.
B. Where seed is to be applied following a straw mulch spread during winter months.

3. Application: mulch material shall be spread uniformly, by hand or machine. When spreading straw by hand, divide the area to be mulched into approximately 1,000 sq.ft. sections and place 70-90 lbs. (1 1/2 to 2 bales) of straw in each section to facilitate uniform distribution.

4. Mulch anchoring: straw mulch must be anchored immediately after spreading to prevent displacement. Other organic mulches listed in table do not require anchoring. The following methods of anchoring straw may be used:
1. Mulch anchoring tool (often referred to as a krimper or krimper tool): this is a tractor-drawn implement designed to punch mulch into the soil surface. This method provides good erosion control with straw. It is limited to use on slopes no steeper than 3:1 where equipment can operate safely. Machinery shall be operated on the contour.
2. Fiber mulch: apply fiber mulch by means of a hydroseeder at a rate of 500-750 lbs./ acre over top of straw mulch or hay. It has an added benefit of providing additional mulch to the newly seeded area.
3. Liquid mulch binders: application of liquid mulch binders and tackifiers should be heaviest at the edges of areas and at crests of ridges and banks, to prevent displacement . The remainder of the area should have binder applied uniformly. Binder may be applied after mulch is spread or may be sprayed into mulch as it is being blown onto the soil.
The following types of binders may be used:
A. Synthetic binders - formulated binders or organically formulated products may be used as recommended by the manufacturer to anchor mulch.
B. * Asphalt - any type of asphalt thin enough to be blown from spray equipment is satisfactory. Recommended for use are rapid curing (rc-70, rc-250, rc-800), medium curing (mc-250, mc-800) and emulsified asphalt (ss-1, css-1, cms-2, ms-2, rs-1, rs-2, crs-1 and crs-2).
*Note: when this method is used, environmental concerns should be addressed to ensure that petroleum-based products do not enter valuable water supplies. Avoid applications into waterways of channels.
4. Mulch nettings: lightweight plastic, cotton, or paper nets may be stapled over the mulched according to manufacturer's recommendations.
5. Peg and twine: because it is labor-intensive, this method is feasible only in small areas where other methods cannot be used. Drive 8 to 10 inch wooded pegs to within 3 inches of the soil surface, every 4 feet in all directions. Stakes may be driven before or after straw is spread Secure mulch by stretching twine between pegs in a criss-cross-within-a square. Turn twine 2 or more times around each peg.

Chemical mulches
Chemical mulches* may be used alone only in the following situations:
A. Where no other mulching material is available
B. In conjunction with temporary seeding during the times when mulch is not required for that practice.
C. From March 15 to May 1 and August 15 to September 30, provided that they are used on areas with lopes no steeper than 4:1, which have been roughened in accordance with surface roughening, Standard and Specification 3.29 of the Virginia Erosion and Sediment Control Handbook, latest edition. If rill erosion occurs, another mulch material shall be applied immedistely.
*Note: chemical mulches may be used to bind other mulches or with fiber mulch in a hydroseeded slurry at any time. Manufacturer's recommendations for application of chemical mulches shall be followed.

Maintenance
All mulches and soil coverings should be inspected periodically (particularly after rainstorms) to check for erosion. Where erosion is observed in mulched areas, additional mulch should be applied. Nets and mats should be inspected after rainstorms for dislocation or failure. If washouts or breakage occur, re-install netting or matting as necessary after repairing damage to the slope or ditch. Inspections should take place up until grasses are firmly established. Where mulch is used in conjunction with ornamental plantings, inspect periodically throughout the year to determine if mulch is maintaining coverage of the soil surface; repairer as needed.

CONSTRUCTION SPECIFICATIONS

MATERIALS:
1. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the requirements noted in table 3.05-b of the VESC handbook.
2. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0degrees f to 120 degrees f.
3. If wooden stakes are utilized for silt fence construction, they must have a diameter of 2 inches when oak is used and 4 inches when pine is used. Wooden stakes must have a minimum length of 5 feet.
4. If steel post (standard "u" or "t" section) are utilized for silt fence construction, they must have a minimum weight of 1.33 * pounds per linear foot and shall have a minimum length of 5 feet.
5. Wire fence reinforcement for silt fence using standard-strength filter cloth shall be a minimum of 14 gauge and shall have a minimum mesh spacing of 6 inches.

INSTALLATION:
1. The height of a silt fence shall be a minimum of 16 inches above the original ground surface and shall not exceed 34 inches above ground elevation.
2. The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter cloth shall be spliced together only at a support post, with a minimum 6-inch overlap, and securely sealed.
3. A trench shall be excavated approximately 4-inches wide and 4-inches deep on the upslope side of the proposed location of the measure.
4. When wire support is used, standard-strength filter cloth may be used. Posts for this type of installstion shall be placed a minimum of 10 feet apart (see detail) and the wire mesh fence must be fastened securely to the upslope side of the post using heavy duty wire staples at least one inch long, tie wires or hog rings. The wire shall extend into the trench a minimum of two inches and shall not extend more than 34 inches above the original ground surface. The standard-strength fabric shall be stapled or wired to the wire fence, and 8 inches of the fabric shall be extended into the trench. The fabric shall not be stapled to existing trees.
5. When wire support is used, standard-strength filter cloth may be used. Post for this type of installation shall be placed a maximum of 10-feet apart (see plate 3.05-1).

COMMONWEALTH OF VIRGINIA
DANIEL M. EARLY
No. 031787
PROFESSIONAL ENGINEER
9/1/06

ACS DESIGN
ENGINEERING • SURVEYING
LANDSCAPE ARCHITECTURE
CONSTRUCTION MANAGEMENT

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LAKEWATCH PLANTATION
WATER AND SEWER EXTENSION
FRANKLIN COUNTY, VIRGINIA

DRAWN BY:	CEK
DESIGNED BY:	CEK
CHECKED BY:	DME
DATE:	31 AUG 2006
JOB NUMBER:	06090a

REVISIONS:

No. 1	31 AUG
UPDATED PER VDOT COMMENTS	
No. 2	
No. 3	
No. 4	

SHEET NO.:
C5.1

EROSION & SEDIMENT NOTES & DETAILS